

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on March 21, 2002 and the Advisory Action of June 19, 2002, and the references cited therewith.

Claims 1, 26, and 37 are amended; as a result, claims 1-2, 4-14, 26-32, and 35-39 remain pending in this application.

§103 Rejection of the Claims

Claims 1-14, 26-32, and 35-38 were rejected under 35 USC § 103(a) as being unpatentable over Lisenker et al. (WO 94/19829).

As has been discussed, the Lisenker et al. reference does not discuss a use of deuterium for reducing random single bit data loss in a FLASH memory cell or other memory cell. The significance of this difference is that FLASH memory includes a programming operation and an erase operation. Both the programming operation and the erase operation must operate in a satisfactory manner for the FLASH memory to perform acceptably. None of the MOSFET devices, TFT's, polyresistors or polyemitter bipolars operate with this two step operation. Specifically, none of the devices discussed in the Lisenker et al. patent includes an erase operation. Thus, there is no precedent in the references cited by the Examiner for concluding that deuterium substitution would work at all to reduce random single bit data loss in a memory cell.

The Lisenker et al. patent application states in the Summary, page 4, lines 36-37 and page 5, lines 1-5, that 'the bond energy of the Si-H and Si-OH bonds is increased by replacing the hydrogen atoms with deuterium atoms. The Si-D and Si-OD bonds thus formed provide completed silicon dangling bonds that are less likely to break when exposed to electrical stresses. Therefore, the deuterium containing devices of the present invention have improved stability, quality, and reliability.' Page 9, lines 11-15 state, 'Because deuterated bonds are more stable than their hydrogen-containing counterparts, they ultimately supplant some hydrogenated bonds during long exposure to deuterium containing compounds.' The feature of a deuterium bond of being less likely to break, described in the Lisenker et al. reference casts doubt on the ability of a deuterium-treated device to "erase" as is required in FLASH memory. Perhaps that is why the Applicant states on page 11, lines 5-8, "Especially preferred devices of this invention are MOS

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transistors in which the gate oxide-silicon layer contains additional deuterium containing bonds. However, other devices such as bipolar junction transistors are also within the purview of this invention."

The Lisenker et al. reference specifically excluded any device with an erase function.

The Examiner acknowledges that the Lisenker et al reference does not anticipate the claims but states that the reference renders the claims obvious. The Applicant asserts that it is only in hindsight that the "obviousness" becomes apparent. Lisenker certainly didn't think it was obvious because he did not include FLASH devices or devices with an erase operation in the list of applicable devices—preferred or otherwise.

AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.116 - EXPEDITED PROCEDURE

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CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6976 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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Date 22 July 02

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Box RCE, Commissioner of Patents, Washington, D.C. 20231, on this 22 day of July, 2002.

Name

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